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EXAMINER	
BOOSALIS, FANI POLYZOS	
ART UNIT	**PAPER NUMBER**
2884	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/711,763	ERTEL ET AL.	
	Examiner	Art Unit	
	Faye Boosalis	2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 October 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/10/05, 1/11/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shoji et al (US 6,344,652 B1) in view of *Frederick et al (US 5,796,109 A).*

Regarding claim 1, Shoji discloses an x-ray detector comprising: an x-ray detection layer (3) configured to output electrical signals in response to reception of x-rays; a circuit board having a plurality of electronic components disposed thereon and configured to at least control readout of the electrical signals from the x-ray detection layer; and a cover (11) assembly enclosing the x-ray detection layer (20) and the circuit board (14) (See Generally Fig. 2A and col. 12, lines 8-33). Shoji does not disclose of cover assembly material. Frederick discloses a radiation detector assembly comprising a cover assembly formed a first material (30) and incorporating impact-absorbing material (28) different from the first material (col. 6, lines 10-11). Frederick teaches the cover (i.e. shield) (30) may be manufactured from any suitable material such as stainless steel, titanium or aluminum. The use of titanium has a lower attenuation than many metals, which is standard for MWD and LWD applications and thus provides lowered attenuation and high strength (col. 6, lines15-20). Therefore, it would have been obvious to modify the x-ray detector disclosed by Shoji, to include a covered

assembly forming a first material and incorporating impact-absorbing material, as disclosed supra by Frederick, to allow for a more versatile apparatus.

3. Claims 2 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoji et al (US 6,344,652 B1) and *Frederick et al (US 5,796,109 A)* as applied to claim 1 above, and further in view of *Watanabe et al (US 2002/0181659 A1).*

Regarding claim 2, Shoji discloses an x-ray detector comprising: an x-ray detection layer (3) configured to output electrical signals in response to reception of x-rays; a circuit board having a plurality of electronic components disposed thereon and configured to at least control readout of the electrical signals from the x-ray detection layer; and a cover (11) assembly enclosing the x-ray detection layer (20) and the circuit board (14) (See Generally Fig. 2A and col. 12, lines 8-33). Frederick discloses a radiation detector assembly comprising a cover assembly formed a first material (30) and incorporating impact-absorbing material (28) different from the first material (col. 6, lines 10-11). Neither Shoji nor Frederick discloses the cover assembly including a handle for portability of the detector. Watanabe disclose a radiographic apparatus comprising a cover assembly (21)(22) wherein the assembly includes a handle (32) to support portability thereof (See Fig. 3, ABSTRACT and paragraph [0047]). Watanabe teaches the a handle (32) (holding hole) passes through the center of gravity of the electronic cassette (11 or the vicinity thereof, when the operator holds the electronic cassette a rotational movement caused by the deviation from the center of gravity does not act on the electronic cassette and thus the operator can easily hold the electronic cassette (paragraph [0047]). Therefore, it would have been obvious to modify the

apparatus suggested by Shoji and Frederick, to include a handle, as disclosed supra by Watanabe, to allow for a more versatile apparatus.

Regarding claim 11, Watanabe discloses the x-ray detector configured as a flat-panel solid state x-ray detector (paragraph [0020]).

4. Claims 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoji et al (US 6,344,652 B1) and *Frederick et al (US 5,796,109 A)* as applied to claim 1 above, and further in view of *Watanabe et al (US 2002/0005490 A1).*

Regarding claims 3 and 4, Shoji discloses an x-ray detector comprising: an x-ray detection layer (3) configured to output electrical signals in response to reception of x-rays; a circuit board having a plurality of electronic components disposed thereon and configured to at least control readout of the electrical signals from the x-ray detection layer; and a cover (11) assembly enclosing the x-ray detection layer (20) and the circuit board (14) (See Generally Fig. 2A and col. 12, lines 8-33). Frederick discloses a radiation detector assembly comprising a cover assembly formed a first material (30) and incorporating impact-absorbing material (28) different from the first material (col. 6, lines 10-11). Neither Shoji nor Frederick discloses the cover assembly including a bumper like impact-absorbing material on the exterior of the cover. Watanabe discloses Watanabe disclose a radiographic apparatus comprising a cover assembly (21)(22) wherein the assembly includes a bumper formed layer of impact-absorbing material, to secure an external perimeter of the cover assembly (paragraph [0055]). Watanabe teaches side walls (91a) of the casing (91) is of a double structure made up of an outer wall (91a) and an inner wall (91b). In the case where a shock is applied from the lateral

direction, the shock is absorbed by the deformation of the wall (91a) of the outer side, and the shock transmitted to the wall (91b) of the inner side is reduced (paragraph [0056]). Therefore, it would have been obvious to modify the detector disclosed by Shoji and Frederick, to include an impact-absorbing material, as disclosed supra by Watanabe, to allow for a more versatile apparatus.

Regarding claims 5 and 6, Watanabe discloses wherein the cover assembly includes an insert of impact-absorbing material (38) disposed at a pre-determined impact zone including a corner of the cover assembly (31a) (paragraph [0037]).

Regarding claim 7, Watanabe discloses the x-ray detector wherein in impact-absorbing material (38) is a viscoelastic material (See Abstract and paragraph [0037]).

5. Claims 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Watanabe et al (US 2002/0005490 A1)* as applied to claim 7 above, and further in view of *Jeromin et al (US 5,661,309 A)*.

Regarding claim 8, Watanabe discloses the x-ray detector wherein in impact-absorbing material (38) is a viscoelastic material (See Abstract and paragraph [0037]). Watanabe does not disclose the impact-absorbing material includes foam. Jeromin discloses an x-ray detector wherein the impact-absorbing material includes foam (col. 3, lines 43-48). Jeromin teaches a design of construction of the cassette is chosen to impart protection from handling damage during frequent movements and possible accidental mishaps, including a load-distributing member (25) made, for example, from a low-density polyurethane foam (col. 3, lines 43-48). Therefore, it would have been obvious to modify the x-ray detector disclosed by Watanabe to include foam in the

impact-absorbing material, as disclosed supra by Jeromin, to allow for a more versatile x-ray detector.

6. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoji et al (US 6,344,652 B1) and *Frederick et al (US 5,796,109 A)* as applied to claim 1 above, and further in view of Endo et al (US 5,965,872 A).

Regarding claim 9, Shoji discloses an x-ray detector comprising: an x-ray detection layer (3) configured to output electrical signals in response to reception of x-rays; a circuit board having a plurality of electronic components disposed thereon and configured to at least control readout of the electrical signals from the x-ray detection layer; and a cover (11) assembly enclosing the x-ray detection layer (20) and the circuit board (14) (See Generally Fig. 2A and col. 12, lines 8-33). Frederick discloses a radiation detector assembly comprising a cover assembly formed a first material (30) and incorporating impact-absorbing material (28) different from the first material (col. 6, lines 10-11). Neither Shoji nor Frederick discloses a scintillator layer and photosensitive layer configured to detect illumination of the scintillator layer. Endo discloses a solid state x-ray detector comprising: a scintillator layer (904) configured to output light in response to x-ray exposure; an array of photosensitive detector elements (401) supported by a glass substrate (col. 9, lines 31-34) and configured to store electrical charge as a function of light output by the scintillator layer during data acquisition and output electrical signals indicative of the stored electrical charge during readout (col. 9, lines 9-22); a housing (101) enclosing the scintillator layer, the array of photosensitive detector elements, and the glass substrate (400) (See Fig. 10). Endo teaches

photoelectric conversion device with built-in peripheral ICs, in which the peripheral ICs thermally contact a chassis, which has high heat dissipation characteristics, and covers a substrate having photoelectric conversion elements and the peripheral ICs, via a thermal conductive member, so as to eliminate an adverse influence of heat produced by the peripheral ICs such as problems of a low S/N ratio, and the like (col. 5, lines 22-30). Therefore, it would have been obvious to modify the detector disclosed by Shoji and Frederick, to include scintillator and photosensitive layer configured to detect illumination of the scintillator within the covered assembly, as disclosed supra by Endo, to allow for a more efficient x-ray detection system.

Regarding claim 10, Endo discloses a glass substrate having transistor (TFT) etched thereon and configured to control operation of the photosensitive layer between a data acquisition state and a readout state (col. 6, lines 18-49).

7. Claims 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endo et al (US 5,965,872 A) in view of *Watanabe et al (US 2002/0005490 A1).*

Regarding claim 12, Endo discloses a solid state x-ray detector comprising: a scintillator layer (904) configured to output light in response to x-ray exposure; an array of photosensitive detector elements (401) supported by a glass substrate (col. 9, lines 31-34) and configured to store electrical charge as a function of light output by the scintillator layer during data acquisition and output electrical signals indicative of the stored electrical charge during readout (col. 9, lines 9-22); a housing (101) enclosing the scintillator layer, the array of photosensitive detector elements, and the glass substrate (400) (See Fig. 10). Endo does not disclose the housing comprising viscoelastic

material. Watanabe discloses the x-ray detector wherein in impact-absorbing material (38) is a viscoelastic material (See Abstract and paragraph [0037]). Watanabe teaches shock absorbers (38) made of elastic sheet-like rubber or gel material are fitted to the inner sides of side walls of the casing main body (31a) so as to cover sides of the flexible circuit board (37), and a gap is slightly defined between each of the shock absorbers (38) and the support (33), and the flexible circuit boards (37) are drawn through those gaps (paragraph [0037]). Therefore, it would have been obvious to modify the detector disclosed by Endo, to include a viscoelectric material secured to the housing, as disclosed supra by Watanabe, to allow for a more versatile apparatus.

Regarding claims 13 and 14, Watanabe discloses the solid state x-ray detector wherein the housing (91) includes one or more cavities (91d), each cavity having an insert of viscoelastic material (102) disposed therein at each corners thereof (Fig. 11 and 12 and paragraph [0057]).

Regarding claim 15, Endo discloses the solid-state x-ray detector further comprising an absorbing material sandwiched between the scintillator layer (904) and the undersurface of the housing (101) (col. 5, lines 22-29). Endo does not disclose the housing comprising viscoelastic material. Watanabe discloses the x-ray detector wherein in impact-absorbing material (38) is a viscoelastic material (See Abstract and paragraph [0037]). Watanabe teaches shock absorbers (38) made of elastic sheet-like rubber or gel material are fitted to the inner sides of side walls of the casing main body (31a) so as to cover sides of the flexible circuit board (37), and a gap is slightly defined between each of the shock absorbers (38) and the support (33), and the flexible circuit

boards (37) are drawn through those gaps (paragraph [0037]). Therefore, it would have been obvious to modify the detector disclosed by Endo, to include a viscoelectric material secured to the housing, as disclosed supra by Watanabe, to allow for a more versatile apparatus.

Regarding claim 16, although Endo nor Watanabe specifically disclose of a drop distance, of 20 cm, of the detector, Watanabe does disclose shock absorbers made of sheet-like elastic material or gel material are disposed on the inner side of the side walls of the casing, even if the apparatus drops down from its side wall by mistake and the side wall of the casing is instantaneously deformed, the shock is absorbed by the shock absorber, thereby the shock transmitting to the support, the x-ray image detection panel, the flexible circuit board or the like can be reduced. As a result, the shock resistance of the apparatus is improved (See Abstract).

8. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Endo et al (US 5,965,872 A) and *Watanabe et al (US 2002/0005490 A1)* as applied to claim 12 above, and further in view of *Watanabe et al (US 2002/0181659 A1).*

Regarding claim 17, Endo discloses a solid state x-ray detector comprising: a scintillator layer (904) configured to output light in response to x-ray exposure; an array of photosensitive detector elements (401) supported by a glass substrate (col. 9, lines 31-34) and configured to store electrical charge as a function of light output by the scintillator layer during data acquisition and output electrical signals indicative of the stored electrical charge during readout (col. 9, lines 9-22); a housing (101) enclosing the scintillator layer, the array of photosensitive detector elements, and the glass substrate

(400) (See Fig. 10). Watanabe *(490)* discloses the x-ray detector wherein in impact-absorbing material (38) is a viscoelastic material (See Abstract and paragraph [0037]). Neither Endo nor Watanabe discloses the cover assembly including a handle for portability of the detector. Watanabe (659) disclose a radiographic apparatus comprising a cover assembly (21)(22) wherein the assembly includes a handle (32) to support portability thereof (See Fig. 3, ABSTRACT and paragraph [0047]). Watanabe teaches the a handle (32) (holding hole) passes through the center of gravity of the electronic cassette (11 or the vicinity thereof, when the operator holds the electronic cassette a rotational movement caused by the deviation from the center of gravity does not act on the electronic cassette and thus the operator can easily hold the electronic cassette (paragraph [0047]). Therefore, it would have been obvious to modify the apparatus suggested by Endo and Watanabe *(490)*, to include a handle, as disclosed supra by Watanabe (659), to allow for a more versatile apparatus.

9. Claims 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endo et al (US 5,965,872 A), *Watanabe et al (US 2002/0005490 A1)* as applied to claim 12 above, and further in view of *Jeromin et al (US 5,661,309 A).*

Regarding claim 18, Endo discloses a solid state x-ray detector comprising: a scintillator layer (904) configured to output light in response to x-ray exposure; an array of photosensitive detector elements (401) supported by a glass substrate (col. 9, lines 31-34) and configured to store electrical charge as a function of light output by the scintillator layer during data acquisition and output electrical signals indicative of the stored electrical charge during readout (col. 9, lines 9-22); a housing (101) enclosing the

scintillator layer, the array of photosensitive detector elements, and the glass substrate (400) (See Fig. 10). Watanabe *(490)* discloses the x-ray detector wherein in impact-absorbing material (38) is a viscoelastic material (See Abstract and paragraph [0037]). Neither Endo nor Watanabe discloses wherein the viscoelastic material includes foam. Jeromin discloses an x-ray detector wherein the impact-absorbing material includes foam (col. 3, lines 43-48). Jeromin teaches a design of construction of the cassette is chosen to impart protection from handling damage during frequent movements and possible accidental mishaps, including a load-distributing member (25) made, for example, from a low-density polyurethane foam (col. 3, lines 43-48). Therefore, it would have been obvious to modify the x-ray detector disclosed by Endo and Watanabe to include foam in the impact-absorbing material, as disclosed supra by Jeromin, to allow for a more versatile x-ray detector.

Regarding claim 19, Watanabe discloses the solid-state x-ray detector further comprising an insert of viscoelastic material (91b) at one or more corners of the housing (91) (paragraph [0055]).

10. Claims 20-22 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Frederick et al (US 5,796,109 A)* in view of *Watanabe et al (US 2002/0005490 A1).*

Regarding claim 20, Frederick disclose a cover assembly (18) to encase components of an x-ray detector (10), the cover assembly comprising: a top support panel (18) and a bottom support panel (18) collectively defining an internal volume configured and sized to house components of an x-ray detector (Fig. 2). Frederick does not specifically disclose of a cavity formed on a supporting panel. Watanabe discloses

at least one cavity (91d) is formed in at least one of the top or bottom supporting panels (91); and impact-absorbing material (102) is disposed in the at least one cavity, the impact absorbing material differing from that which the top support panel and bottom panel are formed (Fig. 11 and 12 and paragraph [0057]). Watanabe teaches a casing (101) is of a double structure made up of an outer wall (101a) and an inner wall (101b), and the outer wall (101a) and the inner wall (101b) are coupled to each other by a joint portion (101c) as in the sixth embodiment. The outer wall (101a), the inner wall (101b) and the joint portions (101c) form a plurality of spaces (101d) partitioned by the outer wall (101a), the inner wall (101b) and the joint portions (101c) as in the sixth embodiment. However, each of the spaces (101d) is filled with a shock absorber (102) made of gel material, rubber (elastic member) or plastic (Fig. 11 and 12 and paragraph [0057]). Therefore it would have been obvious to modify the cover assembly disclosed by Frederick, to include a cavity formed on the support paneling, as disclosed by Watanabe, to allow for a more versatile apparatus.

Regarding claim 21 and 22, Watanabe discloses a cavity (91d) formed in each corner of the at least one of the top support panel (91) and the bottom support panel (91) wherein the impact-absorbing material includes viscoelastic material (102) (Fig. 11 and 12 and paragraph [0057]).

Regarding claim 26, Frederick discloses a radiation detector comprising a cover assembly (18) utilized to withstand more severe vibration and shock environments and therefore such assembly can prevent fracturing of the glass substrate housed in the

internal volume when subjected to a heavy pound point-load (col. 5, lines 50-55 and col. 10, 45-48).

11. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Watanabe et al (US 2002/0005490 A1)* as applied to claim 22 above, and further in view of *Jeromin et al (US 5,661,309 A).*

Regarding claim 23, Watanabe discloses a cavity (91d) formed in each corner of the at least one of the top support panel (91) and the bottom support panel (91) wherein the impact-absorbing material includes viscoelastic material (102) (Fig. 11 and 12 and paragraph [0057]). Watanabe does not disclose of the viscoelastic material including foam. Jeromin discloses an x-ray detector wherein the impact-absorbing material includes foam (col. 3, lines 43-48). Jeromin teaches a design of construction of the cassette is chosen to impart protection from handling damage during frequent movements and possible accidental mishaps, including a load-distributing member (25) made, for example, from a low-density polyurethane foam (col. 3, lines 43-48). Therefore, it would have been obvious to modify the x-ray detector disclosed by Endo and Watanabe to include foam in the impact-absorbing material, as disclosed supra by Jeromin, to allow for a more versatile x-ray detector.

12. Claims 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Frederick et al (US 5,796,109 A)* in view of *Watanabe et al (US 2002/0005490 A1)* as applied to claim 20 above, and further in view of *Watanabe et al (US 2002/0181659 A1).*

Regarding claim 24, Frederick disclose a cover assembly (18) to encase components of an x-ray detector (10), the cover assembly comprising: a top support

panel (18) and a bottom support panel (18) collectively defining an internal volume configured and sized to house components of an x-ray detector (Fig. 2). Watanabe (490) discloses at least one cavity (91d) is formed in at least one of the top or bottom supporting panels (91); and impact-absorbing material (102) is disposed in the at least one cavity, the impact absorbing material differing from that which the top support panel and bottom panel are formed (Fig. 11 and 12 and paragraph [0057]). Neither Frederick nor Watanabe (490) disclose of the cover assembly comprising a handle. Watanabe (659) discloses the cover assembly (21)(22) comprising a handle (32) defined in the supporting panel (See Fig. 3, ABSTRACT and paragraph [0047]). Watanabe teaches the a handle (32) (holding hole) passes through the center of gravity of the electronic cassette (11 or the vicinity thereof, when the operator holds the electronic cassette a rotational movement caused by the deviation from the center of gravity does not act on the electronic cassette and thus the operator can easily hold the electronic cassette (paragraph [0047]). Therefore, it would have been obvious to modify the apparatus suggested by Shoji and Frederick, to include a handle, as disclosed supra by Watanabe, to allow for a more versatile apparatus.

Regarding claim 25, Watanabe (659) discloses the cover assembly wherein the top and bottom support panel (21)(22) are comprised of carbon graphite (paragraph [0049]).

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Faye Boosalis whose telephone number is 571-272-2447. The examiner can normally be reached on Monday thru Friday from 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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